SECTION 7 GUIDELINES -Snake River Basin Office
Bruneau Hot Springsnail (endangered)
(*Pyrgulopsis bruneauensis*)

I. BACKGROUND

Legal Status

The Bruneau hot springsnail was listed endangered on January 25, 1993 (58 FR 5938). However, the U.S. District Court for Idaho set aside the Final Rule listing the species on December 14, 1993. In a June 1995 ruling, the U.S. Court of Appeals placed the springsnail back on the endangered list and this status remains today. The U.S. Fish and Wildlife Service (Service) has conducted another public review and is currently evaluating data and information pertinent to the listing decision.

Species Description

The Bruneau hot springsnail is a member of the family Hydrobiidae. Hydrobiids are gill-breathing, aquatic or semi-aquatic mollusks restricted to permanent or stable waters, particularly those that are spring-fed. They are tiny and presumably slow to actively disperse, although they may be passively transported by floodwater or by birds in their alimentary systems. Despite their minute size, they are often locally abundant in suitable habitats. Hydrobiids tend to occur as endemic species in single springs, or spring (aquifer) systems. The presence of a substantial population of hydrobiid snails at a locality is a direct measure of permanence of the water body; the habitat may have persisted for millennia if this animal group is present (Hershler 1993).

The Bruneau hot springsnail was formally described by Robert Hershler in 1990 from type specimens collected from the Indian Bathtub in Hot Creek, a tributary to the Bruneau River in Owyhee County, Idaho (Hershler 1990). The distinguishing features of *P. bruneauensis* are its small size and squat shell. Adult Bruneau hot springsnails have a small, globose shell reaching a length of 5.5 millimeters (mm) (.22 inch [in]). Fresh shells are thin and transparent, but appear black due to pigmentation (Hershler 1990).

Life History

Water temperature is the primary factor influencing life history. Reproduction occurs throughout the year except when limited by high or low water temperatures (Mladenka 1992). Sexual maturity of Bruneau hot springsnails occurs at approximately two months. They are dioecious (reproductive organs in separate male and female specimens) and lay single eggs on hard surfaces such as rock substrates or other snail shells.

Species Distribution

The Bruneau hot springsnail is found only in the remaining thermal spring flows entering Hot Creek and numerous, small, thermal springs and seeps along an approximately 7.9 kilometer (km) (4.85 mile [mi]) length of the Bruneau River in southwestern Idaho (Mladenka 1992; Mladenka 1993). Surveys were conducted at a total of 201 thermal springs along the Bruneau River downstream and upstream of Hot Creek in 1993; 128 contained Bruneau hot springsnails (Mladenka 1993).

The majority of occupied thermal springs (94 springs) are located along both shorelines of the Bruneau River above its confluence with Hot Creek (Mladenka 1993). The remaining thermal springs, including 34 occupied spring sites, are located at or downstream of the Hot Creek confluence. Thermal spring sites are located primarily above the high-water mark of the Bruneau River.

The Indian Bathtub area is the type locality for the species, but it is now covered with sediment. This and most of the springs along the Bruneau River upstream of Hot Creek are on lands administered by the Bureau of Land Management (BLM), while most springsnail habitats downstream of the Indian Bathtub and Hot Creek are on private land (Figure 1 - BHS).

Most of the springs and seeps containing springsnails are small, ranging from 0.02 square meters (m^2) (.21 square feet [ft^2]) to 120 m^2 (1,282 ft^2) in surface area, with a mean size of almost 1 m^2 (10.7 ft^2) (Mladenka 1993).

There are no additional historic records for this species from the United States or elsewhere. Mollusc surveys of other thermal and cold-water springs in southern Idaho in recent years have failed to locate additional populations of this species.

Habitat Needs

Bruneau hot springsnails are found in flowing thermal springs and seeps with temperatures ranging from 15.7 ^{o} C to 37.5 ^{o}C (60.3 to 99.5 ^{o}F), with the highest densities of snails occurring in springs with higher temperatures. The springsnails are found on exposed surfaces of various substrates, including rocks, gravel, sand, mud and algal film. Water velocity is not considered a significant factor limiting the springsnails distribution, since they have been observed to inhabit nearly 100 percent of the presently available regimes. Water availability is considered the primary factor limiting the species abundance and distribution.

Threats

The major threat to the Bruneau hot springsnail is the reduction of water levels in thermal spring habitats due to groundwater withdrawals from the regional geothermal aquifer. Within the past 25 years water levels in several Bruneau area observation wells, as well as the discharge from many of the thermal springs along Hot Creek and the Bruneau River, have decreased (USGS

1993, USGS 1995). This is especially true for the Indian Bathtub springs, where the species was first discovered. Spring discharge from the Indian Bathtub was estimated at 9,300 liters per minute (2,400 gallons per minute [gpm]) in 1964 and had declined to zero discharge by the summer of 1990. This loss of discharge translates into a 10.37 m (34 ft) decline in the aquifer feeding the Indian Bathtub spring. The total surface area of occupied spring habitat has declined since 1991. Surface area of spring sites occupied by springsnails totaled 415.5 m^2 (4,472. ft^2) in August 1993, a decline of 80 m^2 (861. ft^2) since March 1991.

Past cattle grazing also impacted some of the remaining springsnail habitats, especially those along Hot Creek. Although approximately 64.8 hectares (160 acres) along Hot Creek canyon was fenced in 1990 to protect habitat from livestock, cattle were observed grazing within the enclosure on several occasions (Mladenka 1992). Cattle can affect snails by trampling instream substrate and snail habitats, causing direct springsnail mortality and displacement. The issue of cattle access is being addressed and the effects of cattle grazing are considered minor at this time.

Recreational access may also impact habitat of the Bruneau hot springsnail along the Bruneau River. Makeshift dams constructed by recreationists to form thermal pools for bathing can alter springsnail habitat and trap sediments.

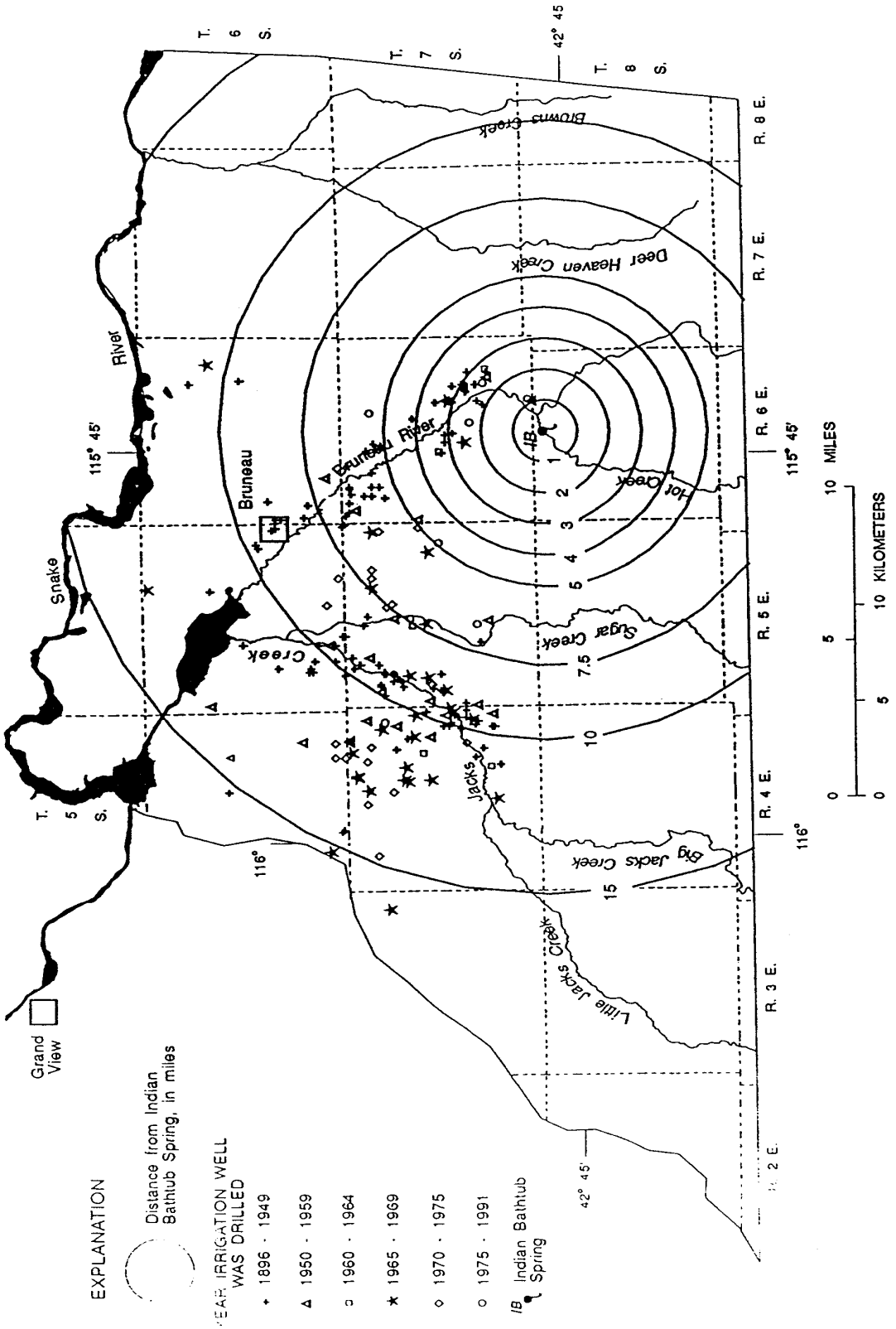

Figure 2 – BHS. Location of irrigation wells and year drilled near Bruneau in Owyhee County, Idaho (USGS 1993)

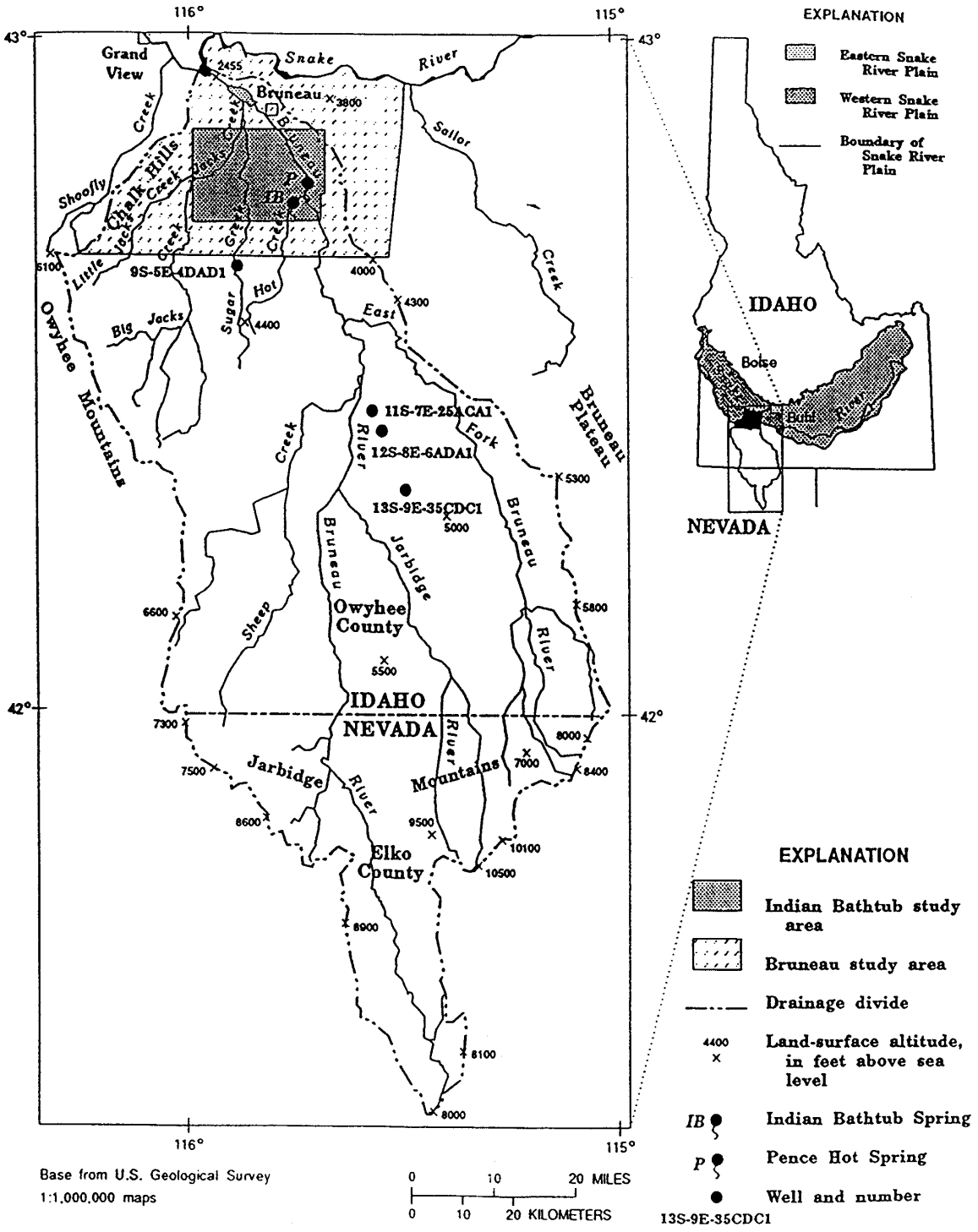

Figure 1 - BHS. General location of Bruneau hotsprings snail habitat, the geothermal aquifer study area, and test wells (USGS 1993).

Updated August, 2002

References

In addition to the references included here, refer to the Final Listing Rule (FR 5938) published in the Federal Register on January 25, l993.

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Mladenka, G.C. 1992. The ecological life history of the Bruneau Hot Springs Snail (*bruneauensis*)**.** Stream Ecology Center, Department of Biological Sciences, Idaho State University, Pocatello, Idaho. Final Report to the U.S. Fish & Wildlife Service, Boise FieldOffice. 116 pp.

Mladenka, G.C. 1993. Report on the 1993 Bruneau Hot Springsnail site survey. Report to the U.S. Fish & Wildlife Service, Idaho State Office, Boise, Idaho. 13 pp.

U.S. Geological Survey. 1993. Effects of well discharges on hydraulic heads in and spring discharges from the geothermal aquifer system in the Bruneau area, Owyhee County, Southwestern Idaho. Water Resources Investigations Report 93-400l, U.S. Geological Survey. 58 pp.

U.S. Geological Survey. 1995. Unpublished letter summarizing results of Bruneau-area ground water-level and springs discharge monitoring data December 1994. Boise, Idaho.

Contacts

Jeri Wood, U.S. Fish and Wildlife Service, 1387 South Vinnell Way, Room 368, Boise, ID 83709 (208) 378-5243

Bill Young, U.S. Geological Survey, 230 Collins Road., Boise, ID, 83702. (208) 387-1314

Jean Greer, U.S. Department of Agriculture, Farm Services Agency, 3220 Elder, Boise, ID 83705. (208) 378 - 5662

II. GUIDELINES - Protocol for Evaluating Project Effects

Consider the following when assessing project impacts upon Bruneau hot springsnails. All projects should be carefully considered on a case by case basis.

1. Does the project have the potential to impact or effect the Bruneau Valley regional geothermal aquifer, or is the project located within a 24.13 kilometer (15 mile) radius of the Indian Bathtub hotspring?
   If no to both, then no consultation is required.
   If yes to either, then continue.

2. Will the proposed project use water, either surface water or ground water?
   If no, then no consultation is required.
   If yes, then continue.

3. Will the proposed project affect water quantity in the geothermal aquifer? Specifically, will the proposed project lower the level of the ground water aquifer or diminish flows in hotsprings occupied by Bruneau hot springsnails?
   If no, then no effect is the likely conclusion.
   If yes, then effects should be evaluated in a Biological Assessment.